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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/754,710	01/12/2004	Jung-Chou Huang	BHT-3183-64	1370

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EXAMINER

NGUYEN, HOA CAO

ART UNIT PAPER NUMBER

2841

DATE MAILED: 09/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/754,710	Applicant(s) HUANG ET AL.	
	Examiner Hoa C. Nguyen	Art Unit 2841	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01/12/2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>05/01/02</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-6 and 10-15 are cancelled as requested by the applicant on the Continuation/Divisional Application Transmittal letter dated 12 January 2004. Claims 7-9 are considered in this Office action.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibuya et al. (U.S. Patent 4,441,982) in view of Cho (U.S. Patent 6,914,196) and Leppard et al. (U.S. Patent 6,361,925).

Regarding claims 7 and 8, Shibuya et al. discloses a tape type flexible printed circuit comprising:

(a) A flexible insulated layer 1 having a thickness about 50 μm , see figure 3 and column 3, lines 8-12;

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(b) a plurality of metal traces 1b formed on the flexible insulated layer and having a thickness about 35

μm, see figure 4 and column 3, lines 8-12; and

(c) a cover layer (solder resist film) 45 formed on the flexible insulated layer, the cover layer having

hollow portions 20 and 20' for exposing the connection terminals 33 of the metal traces 33 (same reference number), see figure 16, column 4, lines 15-18; wherein

(d) a plurality of sprocket holes 19 are formed at two side of the tape type flexible printed circuits, see figure 3, column 3, lines 16-25.

However, Shibuya et al. does not discloses the tape type flexible printed circuits arranged in a plurality of rows and neither the thickness, or the material of the cover layer.

Cho discloses an application of such the tape type flexible single-surface printed circuits as taught by Shibuya et al. (see Shibuya et al., column 13, lines 3-6) comprising a flexible tape board 70, a plurality of unit boards 60 arranged in rows and formed on the flexible base board 68 for chip on board (COB) packaging, and then each finished individual COB package is separated at its final stage of the assembly, see figures 9-10 and column 4, lines 44-55, and column 6, lines 37-46.

It would be obvious to one of ordinary skill in this art at the time of invention to have made the tape type flexible printed circuits of Shibuya et al. arranged in a plurality of rows for a mass production purposes as taught by Cho.

Leppard et al. discloses a polyester resin for uses as protective layers where solder mask or solder resist is one of the applications, see column 13, lines 3-4, column 20, lines 29-30, and column 21, lines 19-48. Leppard et al. further discloses that the cover layer thickness and the nature of the layer support (base) are dependent on the desired field of application, see column 21, lines 49-52. It is also noticed that polyester, polyimide, photoimagible solder mask are well known in the art for uses in solder masking, resisting, coating, and encapsulating, and the thickness of the coating is dependent to a specific application and commonly in the range of 12-30 μm for coating printed circuits.

It would be obvious to one of ordinary skill in this art at the time of invention to have made the commercially well known polyester as taught by Leppard et al. as a cover layer for the flexible printed circuits of Shibuya et al. for protecting the printed circuits formed on the tape type flexible printed circuit and with a thickness in the well known range of 12-30 μm .

Regarding claim 9, Shibuya et al. discloses a flexible circuit tape 1 comprising an electroplating layer 33 which is also the exposed connection terminals of the metal traces 1b, see figure 5, column 3, lines 26-35, column 4, lines 38-52.

Citation of Relevant Art

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Gregory (US 4584767) discloses a in-mold process for fabrication of molded plastic printed circuit boards.

Gregory (US 4710419) discloses a in-mold process for fabrication of molded plastic printed circuit boards.

Nakashima et al. (US 5661086) discloses a process for manufacturing a plurality of strip lead frame semiconductor devices.

McKenney et al. (US 6099745) discloses a rigid/flex printed circuit board and manufacturing method therefor.

Kusner et al. (US 6103135) discloses a multi-layer laminate and method of producing same.

Schmidt et al. (US 6162996) discloses an insulating foil circuit board with rigid and flexible sections.

Lee et al. (US 6210518) discloses a method and fixture for manufacturing flexible printed circuit board.

Schmidt et al. (US 6293008) discloses a method for producing foil circuit boards.

Caron et al. (US 6350387) discloses a multilayer combined rigid/flex printed circuit board containing flexible soldermask.

Dailey et al. (US 6528736) discloses a multi-layer printed circuit board and method of making same.

Sasaoka (US 6865801) discloses an apparatus for manufacturing a wiring board.

Heismann et al. (US 6934160) discloses a printed circuit board arrangement.

Wakimoto et al. (US 6617519) discloses a flexible printed circuit board and manufacturing method.

Conclusion


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6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoa C. Nguyen whose telephone number is 571-272-8293. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kammie Cuneo can be reached on 571-272-1957. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hoa C. Nguyen
24 August 2005


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